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A MICRO-ANALYTIC EXPLORATION OF THE COGNITIVE APPRAISAL OF DAILY STRESSFUL EVENTS AT WORK: THE ROLE OF CONTROLLABILITY

MARIA C. W. PEETERS

University of Nijmegen

BRAM P. BUUNK

University of Groningen

WILMAR B. SCHAUFELI

University of Utrecht

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Employing a daily event-recording method the present study focuses on the nature of stressful events of secretaries, their outcomes and the intervening cognitive appraisal process. With regard to the latter, five factors were selected that may constitute the cognitive appraisal of a stressful event: controllability, uncertainty, threat to self-esteem, predictability and frequency of occurrence. With regard to the outcomes of stressful events, it was assumed that more consistent results may emerge from investigating the relationship between an individual's evaluation of the degree of "significance" of stressful events on the one hand, and strains such as negative affect on the other hand. Results showed that self-reported stressful events could be categorized as (a) interpersonal frustration (b) overload (c) hectic work environment and (d) problems with the organization. Interpersonal frustration appeared to be one of the most "significant" stressors and overload was the least "significant" stressor for secretaries. The degree of controllability over an event appeared to be the most prominent dimension of cognitive appraisal. In the discussion attention is being paid to the merits of daily event-recording methods.

KEY WORDS Stressful event, work, cognitive appraisal, daily event-recording method, secretaries

People differ in their sensitivity and vulnerability to stressful events, as well as in their interpretations and reactions to such events. In order to understand these individual differences we must take into account both the cognitive processes that intervene between the occurrence of an event and the individual's reaction, as well as the factors that affect the nature of this mediation. Lazarus and Folkman (1984) labelled these intervening processes as *cognitive appraisal processes*. Although Lazarus' cognitive appraisal theory dates from 1966, many researchers still do not appear to have seriously considered the distinction between the occurrence of an event and its evaluation (Newton, 1989). For instance, a study by Payne, Jabri, and

Address correspondence to: Maria C. W. Peeters, University of Nijmegen, Department of Psychology, P.O. Box 9104, 6500 HE Nijmegen, The Netherlands

Pearson (1988) illustrates that high demand levels do not necessarily imply that an individual is likely to experience strain. They found that some job demands were appraised as a source of dissatisfaction, and that others were appraised as either satisfying or neutral. The present study aims to examine the cognitive processes through which an individual gives meaning to a stressful event. Although laboratory and animal research have resulted in a considerable understanding of factors that may constitute cognitive appraisal (see for instance Lazarus & Folkman, 1984; Neufeld, 1989), it was felt important to improve the ecological validity by examining this issue in real-life settings, such as the workplace.

In order to study cognitive appraisal processes we chose a combination of quantitative and qualitative measurement methods. A qualitative technique was used to detect the *nature* of daily stressful events, and quantitative self-report measures were used to assess the *appraisal* of the events. So far, many measures of stressors have simply focused, in a quantitative way, on the mere presence of a stressor, rather than acknowledging the transactional nature of stress including the intervening cognitive processes (Dewe, 1992a). With qualitative methods it is possible to examine how workers themselves describe their work situations, instead of taking for granted the a priori labelling of events as stressors (Brief & Atieh, 1987). Moreover, in accordance with Stone, Kessler, and Haythornthwaite (1991) we believe that it is more informative to focus on minor daily stressful events than on major life-events. Focusing on daily stressful events expands our understanding of the impact of the psychosocial environment and facilitates causal interpretations of micro-processes underlying daily experiences. Furthermore, in research outside the workplace it has been shown that daily stressful events are strongly associated with psychological symptoms (e.g., Kanner, Coyne, Schaefer, & Lazarus, 1981) and with somatic illness (e.g., DeLongis, Coyne, Dakof, Folkman, & Lazarus (1982).

In order to produce a micro-analysis of the cognitive appraisal of daily stressful events, a daily-recording method should be employed. The method we chose is referred to as the DIRO (Daily Interaction Record in Organizations) (Buunk & Verhoeven, 1991). The DIRO is based upon the Rochester Interaction Record (RIR) (Reis & Wheeler, 1991) and upon the work of Cutrona (1986). With the DIRO it is possible to assess during the course of a week: (a) the daily *social interactions* at work;¹ (b) the nature and appraisal of work-related *stressful events*; and (c) the *negative affect* experienced at the end of the workday as an indicator of strain. In this study, the DIRO was used with a sample of female secretaries. The choice for this population is based upon various studies that have shown that clerical work is very stressful. For instance, Haynes and Feinleib (1980) found that Coronary Heart Disease (CHD) rates were almost twice as high among women holding clerical jobs as among housewives. The most significant predictors of CHD among clerical workers were: suppressed hostility, having a nonsupportive boss and decreased job mobility.

The Nature of Stressful Events

The first issue concerns the nature of stressful events of secretaries. The respondents record during five consecutive workdays the events they perceive as stressful.

¹In this article social interactions will be excluded (for more information see Peeters, Buunk, & Schaufeli, in press)

In this way we try to gain insight into the different types of stressful events that are, according to the judgement of secretaries themselves, characteristic for their job. Thus, the first question we were interested in is about the types of stressful events of secretaries.

Cognitive Appraisal of Stressful Events

A distinction is usually made between primary and secondary appraisal (Lazarus & Folkman, 1984). Primary appraisal evaluates whether there is anything at stake for the individual. Secondary appraisal occurs when individuals consider whether anything can be done to cope with the stressful event. Primary and secondary appraisal converge to shape the meaning of an event for the individual's well-being.

Holroyd and Lazarus (1982, p. 23) point out that in many contexts, primary and secondary appraisal are not separable. The interdependence of the two processes is also illustrated by a study of Dewe (1992a). This study showed that evaluating the availability of different coping resources, which is usually associated with the secondary appraisal process, made the situation more demanding for some people and can therefore also be considered as being part of primary appraisal. Also Folkman (1984) acknowledged the role of control as being part of both processes. In the present study we accede to this line of reasoning, indicating that we also do not distinguish between primary and secondary appraisals.

There are several factors that may constitute the cognitive appraisal of stressful events, or in other words that determine the degree of "significance" of such an event (Lazarus & Folkman, 1984). On the basis of the literature, we selected five factors for our study. The first one refers to the degree to which individuals feel *uncertain* about the way they must handle or cope with the event. It is assumed that if people feel certain about their way of coping, they will be less inclined to appraise this stressful event as significant (Lazarus & Folkman, 1984). The second factor refers to the degree to which a stressful event given rise to a *threat to one's self-esteem*. As a result of the occurrence of a stressful event, individuals may doubt about themselves. Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen (1986) used threat to self-esteem as the operationalization of primary appraisal. Based on subjects' responses to open-ended questions and on a review of the literature they selected 13 items. One of the factors that emerged from a factor analysis included all items involving threats to self-esteem, indicating that this is a relevant element of the appraisal process. The third factor that may influence the appraisal of a stressful event refers to the *predictability* of the event. Numerous experimental studies have shown that people prefer a situation in which they know that a stressful event is going to happen, above the situation in which some uncertainty exists (Buunk, van der Pligt, & den Boer, 1991). For example, an experiment by Epstein and Roupenian (1970) showed that people who were told that they had a very small chance (5%) of receiving an electrical chock, experienced more stress than those who were told that the chance of a shock ranged from 50 to 100%. The next factor refers to the degree of *control* one has over a stressful event. Although many studies have examined the concept of control in experimental settings (for example Glass, Reim, & Singer, 1971) or as an objective characteristic of the work environment (cf. Karasek & Theorell, 1990), there are few studies that have examined the concept of control in relation to daily hassles. One of the few is a study of Kanner and Feldman (1991) among 140 sixth-graders. They found that

the most stressful hassles were those over which children experienced little control, while the most positive uplifts were those over which they perceived the most control. Furthermore, Dewe (1992b) asked individuals in his study about factors that made a situation demanding. Of the subjects, 25.2% indicated that a lack of control over events was the most demanding factor. The final factor that may influence the cognitive appraisal refers to the *frequency of occurrence* of an event. Dewe (1991) included this factor in his study as one that is commonly associated with the appraisal of stressful events. Results showed indeed that the frequency contributed significantly to the explained variance in tension, after controlling for the type of stressful event. However, it depended on the type of stressful event whether the relationship between frequency and tension was positive or negative.

In this study we will examine how the different types of stressful events as described by secretaries are appraised in terms of the five factors mentioned above. In addition, we aim to examine the relationship between the appraisal dimensions and the "significance" of an event.

The Outcomes of Stressful Events

The final question concerns the outcomes of stressful events. Dewe (1989) suggests that the meaning individuals attribute to events acts as an intervening variable between the stressor itself and subsequent strains, such as in our case negative affect. Inspired by Parket and DeCotiis (1983), he argues that more consistent results may emerge by investigating the relationship between individual evaluations of stressful events on the one hand and strains on the other one, than from the current practice of simply relating the events to different outcomes, thereby ignoring a whole mediating process. Therefore, in our study we will examine if (a) the five appraisal dimensions mentioned in the previous section mediate the relationship between the occurrence of the different types of stressful events and the "significance" of a stressful event and if (b) the "significance" of an event functions as a mediator between the appraisal dimensions on the one hand and negative affect (outcome variable) on the other. Figure 1 presents all the hypothesized relationships.

To summarize, six exploratory questions are addressed in the present study: (a) What types of work-related stressful events are reported by secretaries? (b) How are these different types of stressful events appraised? (c) What type of stressful event is perceived as most "significant"? (d) What is the relationship between the appraisal dimensions and the "significance" of a stressful event? (e) Do the appraisal dimensions mediate the relationship between the occurrence of stressful events and the "significance" of those stressful events? (f) Does the "significance" of a stressful event act as a mediator variable between the appraisal dimensions and negative affect?

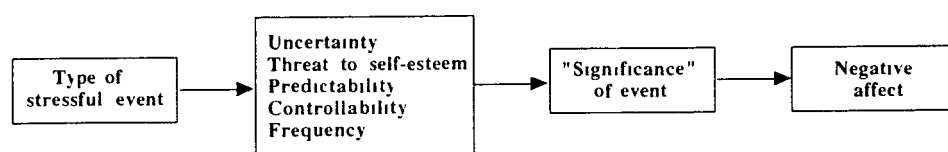


Figure 1. A model for the cognitive appraisal of daily stressful events.

Most occupational stress research uses a between-subject design with scores that are aggregated over measurement occasions or single scores that are assumed to represent a stable characteristic of the subjects appraisal and stress process. However, the DIRO method, in which individuals fill out detailed reports of their stressful events and appraisal process for five consecutive days, allows analyses on an event-by-event basis. Consequently, it enables the examination of within-subjects effects (Michela, 1990). These kind of effects allows us to compare the same person with himself or herself across several stressful events.

METHOD

Subjects

A sample of 41 female secretaries, employed at an university was taken for this study. Their mean age was 37.6 years ($SD = 8.7$), ranging from 21 to 55 years. They all worked as department secretaries and were employed as secretaries for an average of 9.8 years ($SD = 8.3$), ranging from 2 months to 29 years. Somewhat more than half of the secretaries worked full-time (53.7%) while none worked less than 20 hours a week. Their work included such activities as word processing, answering questions from students, organizing exams, answering the telephone and arranging all kind of things for the head of the department.

Procedure

The DIRO was used as the method for data collection. In a brief first contact between each subject and the first author, the study was introduced and secretaries were asked whether they were willing to participate. The anonymity and confidentiality of the data were emphasized. In exchange for their cooperation they were promised a small gift. In order to explain how to fill out the questionnaires, the first author made a second appointment with each secretary individually. They were given the DIRO and were asked to complete all forms during five consecutive workdays. Because not all the secretaries worked full-time, the days under study were not for all secretaries the same days. With each secretary a schedule was made in which their record-keeping period was established. Because the results of some recent studies (cf. Clark & Watson, 1988; Kennedy-Moore, Greenberg, Newman, & Stone, 1992; Larsen & Kasimatis, 1990) support the idea of a weekly rhythm in day-to-day mood, we tried as much as possible to include all five days of the week in this period. Furthermore, it was emphasized that it was important to fill out the records at the end of the day. They were urged to be very accurate in their record keeping and to skip a day rather than record data retrospectively the next workday. To enhance the accuracy each secretary was given a little notebook in which she could immediately briefly record the content and duration of a stressful event. We assumed that this notebook would refresh the memory at the end of the day. To encourage daily recording, the first author visited the respondents almost daily; she picked up the forms they had already filled out and checked if there were any problems with completing the DIRO.

Analogously to Reis, Senchak, and Solomons (1985) we developed an evaluative questionnaire to determine how secretaries appreciated the procedure and how

accurate they felt their record-keeping had been. On a seven-point scale the mean-rating for accuracy was 2.94, $SD = 1.8$ (1 = *very accurate*; 7 = *very inaccurate*). In the study of Reis *et al.* (1985) this score was 2.47. The percentage of stressful events that were not recorded was 5.42%. The mean score on the question about how difficult it was to determine whether something was actually a stressful event was 5.56, $SD = 1.8$ (1 = *very difficult*; 7 = *not at all difficult*).

Instruments

One scale from the Dutch Organizational Stress Questionnaire (DOSQ) (Van Dijkhuizen, 1984) was employed. This was the *basic level of negative affect-scale*; which is an 11-item scale that measures the tendency to experience negative emotions. Cronbach's alpha is .74. For the present study we used two forms of the DIRO. First, the *Daily Negative Affect Record* consists of a 11-item scale assessing the degree to which one experiences negative or positive (recoded) feelings at the end of each workday, such as being angry, relaxed, nervous, etc. Cronbach's alpha was .81.² Second, on the *Daily Stressful Event Record*, individuals were asked to describe in a few sentences any stressful event that happened during the day and that had left them feeling upset for two hours or more, with a maximum of five (Cutrona, 1986). Next, they were requested to answer several questions about this event, all referring to the factors that are supposed to determine the "significance" of a stressful event. The answers for all the questions varied from (1) *not at all* to (5) *to a very large extent*. The first question refers to the degree of "significance". *Significance*: "How significant was this event for you?" ($M = 3.3$; $SD = .91$). The next questions refer to the dimensions of the appraisal of a stressful event. *Uncertainty*: "Did you feel uncertain about the way you had to handle this stressful event?" ($M = 1.9$; $SD = .98$). *Threat to self-esteem*: "Did this event make you start to doubt yourself?" ($M = 1.8$; $SD = .94$). *Predictability*: "To what degree could you foresee that this event was going to happen?" ($M = 2.5$; $SD = .28$). *Controllability*: "Did you have the feeling that you had control over the event?" ($M = 2.7$; $SD = 1.1$). *Frequency*: "How often do such events happen?" The answers on the latter question varied from (1) *never* to (5) *often*. ($M = 3.2$; $SD = 1.15$).

RESULTS

The Nature of Stressful Events

The first research question concerned the *nature* of the stressful events of secretaries. Sixty-eight stressful events were reported. This is, on the average, one stressful event in five days, which may seem rather low, but one has to keep in mind that these were all events that kept them occupied for two hours or more. Content analysis was used to create categories that were mutually exclusive. Four categories emerged. (a) *Interpersonal frustration* (e.g., "Colleague holds an extremely long telephone conversation in a quasi low tone because it deals with so-called confidential issues"); (b) *Work overload* (e.g., "I had to finish several things before 17.00 hours. Because of this terrible time pressure, everything went wrong") (a) *Hectic*

²The Cronbach's alpha coefficient was based on average scores for the subjects, across each day they completed the negative affect record

work environment (e.g., "At the same time, two colleagues are talking loudly with each other, a student enters the room and joins the club, suddenly there is a terrible noise coming from another department, and in my office the telephone rings"); (d) *Problems with the organization*. This category includes mainly problems that are the result of the bureaucracy of the university, or problems which imply a lack of control (e.g., "They refused to let me follow a course on Word Perfect"). Four independent raters were asked to assign the reported events into one of these a priori categories. The inter-rater reliability (Cohen's kappa) was .63 (range .54 to .74) indicating that the four raters sufficiently agreed with each other. Occasionally, when there was a disagreement among the raters, there was a discussion.

The Appraisal of The Different Types of Stressful Events

To examine if the four types of stressful events differ on the five appraisal dimensions that are postulated in the introduction, we structured our data in a way that a stressful event is the unit of analysis ($N = 68$). This was necessary because data analysis only makes sense for each stressful event separately. Analyzing with mean scores over days is impossible because each type of event has to be related to its specific evaluation. However, because the number of reported events was neither normally distributed across days (kurtosis = 6.22; skewness = 2.51) nor across subjects (kurtosis = 10.59; skewness = 3.07) it was necessary to control for non-independence between the stressful events. Since it is well established that employee's reports of stressful events may be related to affective tendencies (Chen & Spector, 1991) and since this was indeed the case in the present study ($r = .55$; $p < .001$) we controlled in all the following analyses for employee's "basic level of negative affect". A MANCOVA was conducted with type of stressful event as independent variable, the five appraisal dimensions as dependent variables and the basic levels of negative affect as covariate. The multivariate effect appeared to be significant ($F[15,171] = 2.74$; $p < .001$).³

Figure 2 shows the mean scores for all the types of stressful events on the different appraisal dimensions. The univariate results showed that the four types of stressful events differed significantly from each other with regard to controllability ($F[3,59] = 2.99$; $p < .05$) and with regard to the frequency of occurrence of an event ($F[3,59] = 3.59$; $p < .05$). The secretaries perceived overload as the most and interpersonal frustration and problems with the organization as the least controllable stressful event. Furthermore, Figure 2 shows that all the reported events appear to occur regularly, but working in a hectic environment happened most frequently.

The "Significance" of Stressful Events. To examine what type of stressful event was perceived as most significant an ANCOVA was conducted with "significance" of event as dependent variable, type of stressful event as independent variable and basic level of negative affect as covariate. Overload appeared to be the least significant stressor ($M = 2.85$ versus 3.67 for interpersonal frustration; 3.71 for organizational problems and 3.45 for hectic work environment; $F(3,60) = 2.38$; $p < .05$). Overload differed significantly from interpersonal frustration and from organizational problems, but not from hectic work environment.

³Due to listwise deletion of missing values, $N = 63$.

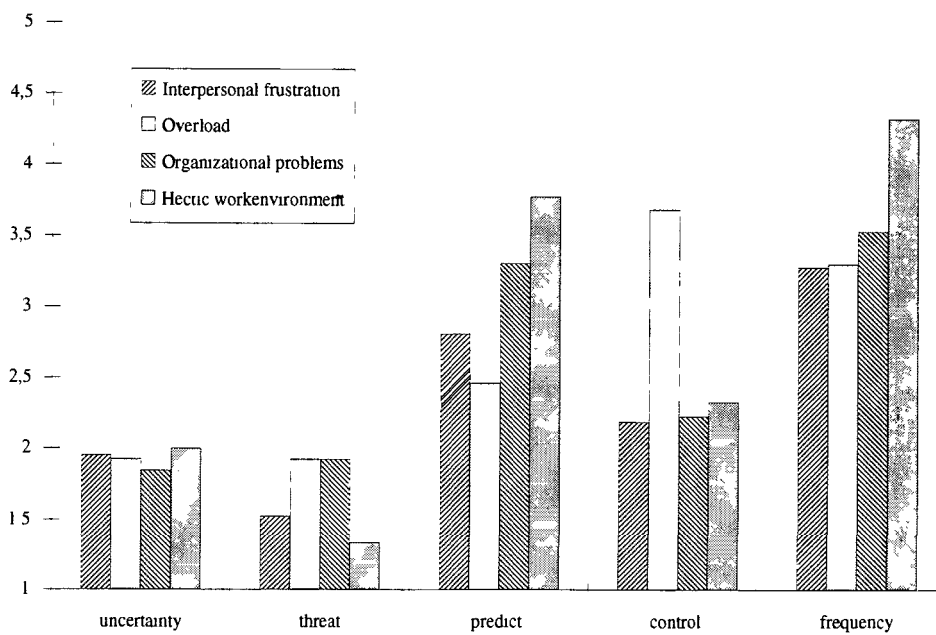
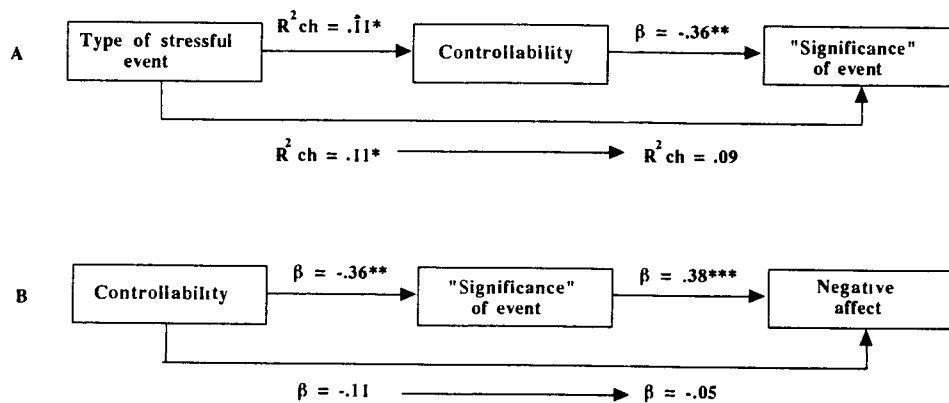


Figure 2. Scores from the types of stressful events on the cognitive appraisal dimensions

The Cognitive Appraisal Dimensions and "Significance". In order to assess the association between the appraisal dimensions and the "significance" of an event, partial correlations were computed, controlling for the basic level of negative affect. Only controllability appeared to correlate significantly with the "significance" of an event ($r = -.36; p < .01$), indicating that the more a stressful event is perceived as controllable, the less "significant" this event will be. None of the other appraisal dimensions appeared to correlate significantly with the "significance" of a stressful event.

The Mediating Role of The Appraisal Process. In order to assess the hypothesized mediating role of the appraisal process as presented in Figure 1, regression analyses were executed. Again a stressful event functioned as the unit of analysis. The "basic level of negative affect" was entered in the first step as a control variable. According to Baron and Kenny (1986) a variable functions as a mediator if (a) the relation between the mediator and the dependent variable is significant, (b) the relation between the independent and mediator variable is significant, and (c) when controlled for the mediator, a previously significant relation between the independent and dependent variable is no longer significant. Some additional remarks have to be made. Firstly, since "type of stressful events" is a categorical variable it was necessary to transform this variable into $k-1$ dummy variables, where k indicates the number of categories. Secondly, since "type of stressful event" is represented by three dummy variables ($k-1$), we considered the R^2 -change instead of the individual regression coefficients. Thirdly, since only controllability showed a significant relationship with the "significance" of a stressful event, this

was the only variable that could possibly mediate the relationship between the type of stressful event and the "significance" of a stressful event. Therefore controllability was the only appraisal dimension that was included in the analyses. The results are presented in part A of Figure 3.



* $p < .05$; ** $p < .01$; *** $p < .001$

Figure 3. The mediating role of (A) controllability, and (B) the "significance" of stressful events.

Figure 3 shows that (a) the relation between controllability (mediator) and "significance" (dependent variable) is significant ($\beta = -.36$), (b) the relation between the types of stressful events (independent variable) and controllability (mediator) is significant ($R^2_{ch} = .11$). The betas of the three dummy variables with controllability are all significantly negative ranging from $-.29$ to $-.43$; $p < .05$. In case of dummy variables, a negative relationship indicates that the score on the dependent variable for the dummy's is smaller than the score on the dependent variable for the reference category⁴ which is in this case overload. Thus, overload is more controllable than working in a hectic environment, problems with the organization and interpersonal frustration. Most important is the finding that when controlled for controllability, the previously significant relation between the types of stressful events and "significance" ($R^2_{ch} = .11$; $p < .05$) is no longer significant ($R^2_{ch} = .09$; ns). Thus, according to Cox and Ferguson (1991) who argue that "a reduction in regression coefficients between the independent and dependent variable would be all that is required to indicate mediation" (p. 13) the results slightly support the mediating function of controllability. In other words: the more a certain stressful event is characterized as an interpersonal frustration, or as a problem due to the hectic work environment or as an organizational problem,

⁴In case of dummy coding the excluded category (k-1) becomes a sort of reference point by which the effects of the other dummies are judged and interpreted. For this reason the excluded category is referred to as reference category.

the less it is perceived as controllable and the more "significant" it will be. Finally, we examined if the "significance" of a stressful event mediates the relationship between controllability and negative affect. The results are presented in part B of Figure 3. It shows that (a) the relation between "significance" of stressful event (mediator) and negative affect (dependent variable) is significant ($\beta = .38$), and that (b) the relation between controllability (independent variable) and "significance" of stressful event (mediator) is significant ($\beta = -.36$). Most importantly, part B of Figure 6.3 shows that when controlled for "significance" of stressful event, the relation between controllability and negative affect decreases from $\beta = -.11$ to $\beta = -.05$, indicating that the "significance" of stressful events indeed mediates the relationship between controllability and negative affect. In other words: the more a stressful event is perceived as uncontrollable the more it is perceived as "significant" which in turn leads to more negative affect.

DISCUSSION

The general purpose of this research was to study, on a day-by-day basis, both the nature and appraisal of daily stressful events of secretaries. Some interesting but tentative results emerged. Firstly, interpersonal frustrations appeared to be one of the most significant stressors for the secretaries. This finding is in line with the results of a study by Spector (1987) among 136 female clerical employees of a university. He found that, of all four stressors included in the study, interpersonal conflict had the highest correlation with stress-related health symptoms, such as stomach disorders, sleep disturbance and headaches. Apparently, interpersonal transactions in the work of secretaries are related to negative affect and psychological symptoms. Even for police officers, the most serious stressors seem to be the problems in the relationships with their colleagues and superiors, rather than other events that are typical for police work, such as dealing with victims of serious accidents, being attacked by aggressive offenders, etc. (Buunk & Verhoeven, 1991). Also in a study among young engineers, interpersonal conflict appeared to be one of the two major categories of acute stress (Keenan & Newton, 1985). Schwartz and Stone (1993) assert that not only the work of secretaries is susceptible to interpersonal conflicts, but that in general, much of the strain of working may be due to the interpersonal environment rather than to specific job demands. In their study among a community sample of working adults, negative interactions with people at work accounted for the greatest proportion of work problems (almost 75%). Thus, in general it can be concluded that the nature of social relationships at work is very important, independently from the occupational setting.

Other stressors in the work of secretaries are the hectic environment in which they have to work and the problems they experience with the bureaucracy of the university. Like interpersonal frustrations, these kinds of stressful events are appraised as rather significant. This is not true for overload, the final stressor that was reported by secretaries. Overload was not appraised as significant. At first glance, it may seem strange that events that are recorded by secretaries as stressful, such as overload and to a lesser degree the hectic work environment, are not *perceived* as stressful. But, as in the study of Dewe (1992b), in which self-reported stressors were also appraised differently, this indicates that individuals do discriminate between stressors in terms of the way they appraise and attach meaning to

them. This is in line with the conception of several authors (cf. Dewe, 1992b; Frese & Zapf, 1988; Newton, 1989) that there is a difference between the perception of a stressful event and the appraisal of an event, in the sense that the latter predominantly determines whether the perceived stressor will lead to negative consequences for the worker.

A question that still remains unanswered is: Why is particularly overload not appraised as significant? According to our model it should depend on the degree of controllability of an event because controllability appeared to be the only factor that related significantly to the "significance" of an event. Indeed the results showed that the secretaries considered overload as the most controllable stressful event. It could be that secretaries believe that overload is very characteristic for their function and they anticipated on this stressor, which might explain why they feel more control over these kind of events. On the other hand, they could not foresee, or did not realize that they also had to deal with interpersonal frustrations, bureaucratic interferences and hectic work environments because these types of stressful events are not that characteristic for a clerical function. This reasoning could also explain why the policemen in the study of Buunk and Verhoeven (1991) suffer mostly from interpersonal conflict instead of from stressors that are considered typical for this profession such as dealing with victims of serious accidents of being attacked by aggressive offenders.

Our research was also undertaken to select factors that determine the degree of "significance" of a stressful event. The results draw attention to the concept of control. In models of work stress (Karasek & Theorell, 1990) control has usually been treated as an objective characteristic of the work environment. In our research, control is considered to be part of the subjective appraisal process. The more controllable a stressful event appeared to be, the less significant this event appeared to be.

In sum, it can be concluded that, to a certain degree, our data support the hypothesized model. Some indications were found for the mediating role of the "significance" of a stressful event and for the mediating role of the degree of controllability. However, we found no indications for the other four appraisal dimension that are supposed to explain the "significance" of a stressful event. It remains a challenge for future research to distinguish alternative variables that constitute the appraisal of stressful events in work settings.

Our research also has some limitations. Since the study had an exploratory character, circumspection in the interpretation of the data is required. Another limitation relates to the operationalizations of the appraisal dimensions. They may seem rather poor. However, if a complete scale had been used for each concept, the necessary time for filling out the records would increase considerably. Probably, this would have had a negative effect on secretaries' willingness to participate in our study. Finally, as DIRO assessment is time and energy consuming, it can only be applied to small groups.

Nevertheless, we conclude that the results of the present study lend some support, albeit tentative, that occupational stress research may benefit from methodologies that offer alternative approaches that further refine the measurement of stressors, strains and the intervening cognitive appraisal process. Moreover, the DIRO enables us to examine the concepts of stress and appraisal more "objectively" than ordinary questionnaire research does, in the sense that it requires less emotional and cognitive processing by the subjects (Frese & Zapf, 1988).

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